



Boston Human Rights Commission

Broadband Access in Boston Project Report

Thalia Viveros-Uehara, MSc (Graduate Intern)
School for Global Inclusion and Social Development
University of Massachusetts Boston

Prof. Sindiso Mnisi Weeks, Academic Supervisor, University of Massachusetts Boston
Reyes Coll-Tellechea, Commissioner, Boston Human Rights Commission Supervisor

February-June 2021

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List of Acronyms

BHRC: Boston Human Rights Commission.

DSL: Digital Subscriber Line.

FCC: Federal Communications Commission.

ICT: Information and Communications Technology.

ISP: Internet Service Provider (*ISPs: Internet Service Providers*).

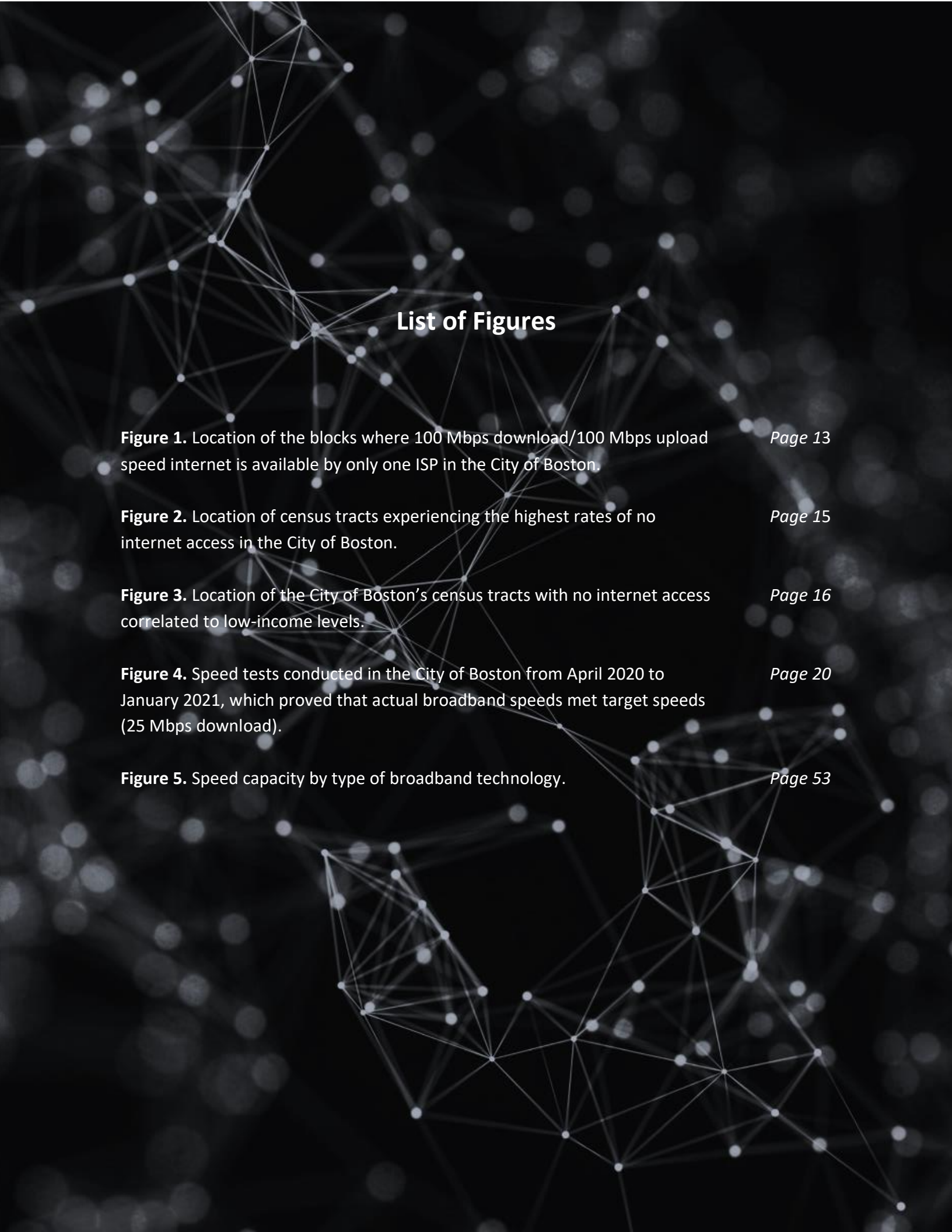
MBI: Massachusetts Broadband Institute.

Mbps: Megabytes per Second.

PC: Personal Computer.

UN: United Nations.

US / USA: United States of America.



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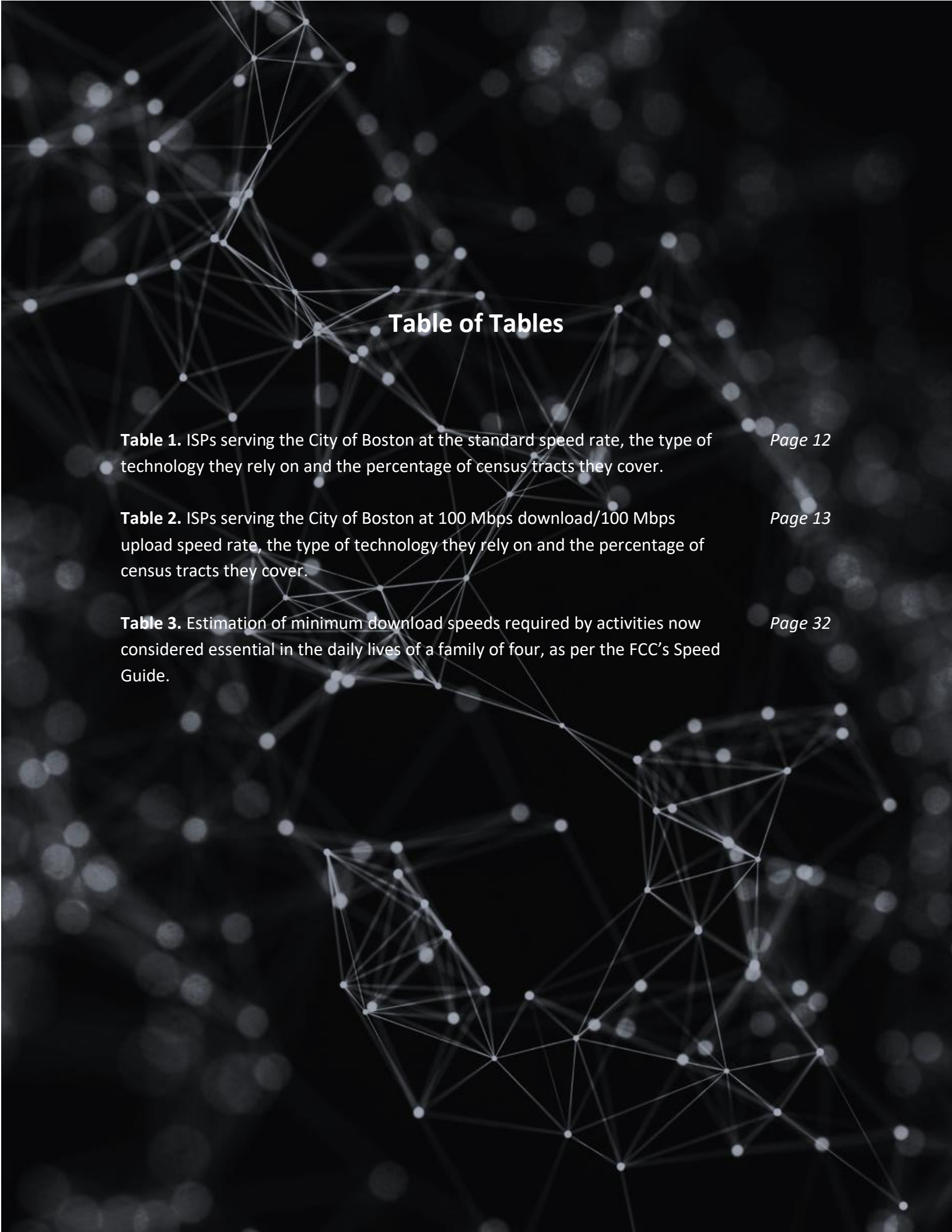


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Abstract

Lack of or deficient broadband connectivity hinders the fulfillment of freedoms in the United States of America. Digital equity is a civic and human right and ensuring digital equity in the City of Boston has become a fundamental goal for the Boston Human Rights Commission. This report addresses Boston's digital divide within a human rights framework, and it is part of a series of initiatives undertaken by the BHRC¹ to design, propose, and — in some cases — lead effective interventions in matters as well as to find and understand patterns and practices of systematic discrimination. In the City of Boston while universal broadband access is almost achieved in specific (more privileged) neighborhoods, low-income parts of the city and those whose residents are communities of color experience the digital divide disproportionately. Furthermore, there is evidence that in Boston lack of competition is affecting internet prices, and that users are not getting the speed rates they contract. Nonetheless, achieving universal access to quality, affordable, high-speed, and neutral broadband in Boston is not a distant aspiration; past and current efforts put in place by the public sector, nonprofit organizations, and Internet Service Providers demonstrate the virtues and potential of coordinated action. Perhaps more importantly, they signal all stakeholders' willingness to grapple with the challenges our time presents to the city and its residents.

¹ "Boston Human Rights Commission," City of Boston, accessed June 14, 2021, <https://www.boston.gov/boston-human-rights-commission>

1. Introduction

Over the recent decades, broadband in the US has transitioned from being an *accessory* to being an *essential service* upon which the realization of rights depends directly. In 2021, almost no activity can be performed unassociated from a digital device (computer, tablet, smartphones, sensor) or from the knowledge and skills acquired through the *World Wide Web* through a broadband connection that allows us to navigate the internet. Access to the internet is no longer a feature restricted to business or governmental activities, but it is embedded in every moment of a person's life.

In the United States particularly, *access to affordable, high-speed, and neutral fixed broadband* is now a requirement for fulfilling basic needs such as education, information, government services, financial services, home security services, and health services, upon which our economic and social wellbeing closely depend. Hence, the gap between those who have access to a reliable and affordable broadband connection and those who have not dramatically determines people's opportunities and resources to live good, productive, and free lives, the kind of lives we all have reason to value.

The COVID-19 pandemic has laid bare the unquestionable centrality of broadband access for achieving social inclusion.² These challenging times have exposed how closely associated broadband access is with personal markers constructed on socioeconomic, gender, racial, ethnic, age, and ability lines, around which our country's inequality has historically unfolded.³

² ITU and UNESCO, *The State of Broadband 2020: Tackling digital inequalities* (Geneva: International Telecommunications Union and United Nations Educational, Scientific and Cultural Organization, 2020), xii. https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.21-2020-PDF-E.pdf

³ Emily A. Vogels et al., "53% of Americans Say the Internet Has Been Essential During the COVID-19 Outbreak," *Pew Research Center*, April 30, 2020, <https://www.pewresearch.org/internet/2020/04/30/53-of-americans-say-the-internet-has-been-essential-during-the-covid-19-outbreak/>.

Researchers have identified the digital divide as a dynamic concept encompassing numerous dimensions and levels.⁴ Such complexity has driven the phenomenon to further split into two concepts: *first-level* and *second-level* gaps. The first-level divide refers to *lack of material access to digital devices* (such as computers, tablets, or cellphones) *and internet connection*; the second-level divide encompasses *the absence of digital skills and literacy* that mediate people's use of communication technologies. Closing the digital divide to achieve equity means recognizing and tackling both of these levels as interconnected parts inherent to the same problem.

This report is mainly concerned with one aspect of the *first-level digital divide*. It looks at how *access to affordable, high-speed, and neutral fixed broadband is paramount for achieving digital equity in the City of Boston*. Further, this report regards **digital equity as a human right**. Given how essential broadband access is for realizing human rights and ensuring social inclusion, **achieving digital equity in the City of Boston has become a fundamental goal for the Boston Human Rights Commission.**⁵

Section 2 makes the case of the critical role high-speed broadband access plays in ensuring lives of dignity in our time. Subsequently, by drawing on data from the Federal Communications Commission, scholarship work, institutional reports, and testimonies delivered before the Boston Human Rights Commission, **section 3** provides an overview of broadband coverage in Boston from a human rights lens. More specifically, the availability, accessibility, affordability, speed, and neutrality of the internet are illustrated alongside their relation to the city's income and racial composition.

⁴ Christopher Ball et al., "A Call for Computer Recess: The Impact of Computer Activities on Predominantly Minority Students' Technology and Application Self-Efficacy," *American Behavioral Scientist* 64, no. 7 (2020): 885. <https://doi.org/10.1177/0002764220919142>

⁵ In 2011, the Boston City Council declared Boston to be a Human Rights City (Boston City Council, 2011). Boston's Human Rights Commission was established by City ordinance in 1984 to guarantee that all residents are given fair and equal treatment under the law. The Commission became inactive in 1996 and was reactivated by Mayor Martin Walsh in 2019.



Finally, **Sections 4** and **5** delve into the practicalities of digital equity. More specifically, **Section 4** explores the initiatives in place (before and during the COVID-19 pandemic) to promote the expansion of broadband access in the United States of America. Such recount of initiatives goes over measures taken by the public sector (federal, state, and local governments), private broadband providers, and nonprofit organizations. **Section 5** illustrates some initiatives across the US that have applied some of the human rights principles and standards throughout the broadband provision process. This paves the way for delineating some recommendations conducive to improving access to affordable, high-speed, and neutral fixed broadband in the City of Boston.

The report encloses a glossary of terms at the end to help navigate the specialized vocabulary that inevitably comes with conversations about digital technologies.

2. Why Digital Equity Matters?

The evolving social and economic circumstances that characterize our present times make human wellbeing dependent on digital tools. The opportunity to have a reliable and affordable internet connection at home is not a “luxury”—as our previous generations had conceived—but it is now instrumental for living the lives we all have reason to value. In the United States, those who do not have access to nor can effectively use the internet are also socially excluded.⁶ Hence, digital equity becomes today’s condition for living fulfilling lives, lives of dignity. **Digital equity is, therefore, a right everyone must enjoy.**

The acknowledgment of digital equity as a human right and its relationship with other human rights has increasingly been brought to light. Crucially, the expansion of broadband access has been a central component in this recognition. Before he passed away, Congressman John Lewis stated that “Access to the internet ... is the civil rights issue of the 21st century.”⁷ In the same vein, Federal Communications Commissioner Geoffrey Starks explained, “Our historic failure to close the digital divide has had a devastating effect on communities of color in both rural and urban America.”⁸

At this point in time, those who do not have access to nor can effectively use the internet are also socially excluded.

⁶ Massimo Ragnedda, *Enhancing Digital Equity, Connecting the Digital Underclass* (Cham: Palgrave Macmillan, 2020), 2.

⁷ Jonathan Sallet, *Broadband for America Now* (Evanston: Benton Institute for Broadband & Society, 2020), 6. https://www.benton.org/sites/default/files/BroadbandAmericaNow_final.pdf

⁸ Sallet, 6.

“Access to the internet ... is the civil rights issue of the 21st century.”

John Lewis (1940-2020)

Several US-based nonprofit organizations have pushed for the international recognition of the digital divide as both a consequence and cause of human rights violations.⁹ As a result, in 2017, the United Nations High Commissioner for Human Rights called on countries and business enterprises to ensure that the development and deployment of information and communication technologies are guided and regulated by international human rights law.¹⁰

In 2016, the United Nations Human Rights Council also urged countries to apply a comprehensive human rights approach to bridge the digital divide, particularly the gender digital divide.¹¹

Lack of internet connection impedes thousands of people across the US from realizing their rights to education, work, and health. Unfortunately, the City of Boston is not the exception.

The obstacles that the digital divide poses for realizing human rights in the US have raised international concerns. In his report of his 2017 mission to the country, the UN Special Rapporteur on extreme poverty and human rights expressed concern over the adverse effects that lack of internet connectivity has in granting impoverished

⁹ Several US-based organizations, such as Access Now, Digital Rights Foundation, IT for Change, and World Wide Web Foundation, among others, submitted contributions for the 2017 Report of the UN High Commissioner for Human Rights (see footnote 10).

¹⁰ United Nations General Assembly, “Promotion, protection and enjoyment of human rights on the Internet: ways to bridge the gender digital divide from a human rights perspective” (UN Document A/HRC/35/9, New York, 2017), 14. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/111/81/PDF/G1711181.pdf?OpenElement>

¹¹ United Nations General Assembly, “The promotion, protection and enjoyment of human rights on the Internet” (UN Document A/HRC/RES/32/13, New York, 2016), 3. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G16/156/90/PDF/G1615690.pdf?OpenElement>

communities' access to social protection benefits, other government services, and even employment.¹²

These hurdles were exacerbated during the COVID-19 pandemic. Lack of or low-speed internet access impeded thousands of people in the country from exercising their right to education, performing their jobs remotely, or attending telemedicine consultations.^{13, 14} The City of Boston was not an exception to this concerning scenario.

Moreover, broadband's lack of neutrality hinders the fulfillment of freedoms the United States of America proudly praises itself for advancing. The rights enshrined in the US Constitution's First Amendment are at risk when internet traffic is not open and free.¹⁵ The American Civil Liberties Union has been vociferous in this regard. The organization has raised concerns about the incentives and ability broadband providers have to interfere with the internet and throttle the bandwidth. New technologies allow telecom companies to scrutinize every piece of information users send or receive online. These companies can program the computers to "interfere with the data flow by slowing down or blocking traffic and communicators that they don't like and speeding up traffic they do like or that pays them extra for the privilege."¹⁶

The rights enshrined in the US Constitution's First Amendment are at risk when internet traffic is not open and free.

¹² United Nations General Assembly, "Report of the Special Rapporteur on extreme poverty and human rights on his mission to the United States of America" (UN Document A/HRC/38/33/Add.1, New York, 2018), 16. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G18/125/30/PDF/G1812530.pdf?OpenElement>

¹³ Special Rapporteurship for Freedom of Expression, "Press release R206/20," *Organization of American States*, August 31, 2020, <http://www.oas.org/en/iachr/expression/showarticle.asp?IID=1&artID=1182>.

¹⁴ United Nations General Assembly, "Right to education: impact of the coronavirus disease crisis on the right to education—concerns, challenges and opportunities" (UN Document A/HRC/44/39, New York, 2020), 10-11. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G20/158/03/PDF/G2015803.pdf?OpenElement>

¹⁵ Tom Miles, "U.N. freedom of speech expert concerned about net neutrality," Reuters, December 20, 2017, <https://www.reuters.com/article/us-usa-internet-un-idUSKBN1EE2DA>.

¹⁶ ACLU, "What is Net Neutrality?," *ACLU*, December, 2017, <https://www.aclu.org/issues/free-speech/internet-speech/what-net-neutrality/>

Violations to the right to freedom of opinion and expression, in turn, trap already marginalized groups in disadvantaged situations, thereby perpetuating inequality.¹⁷

As much as deficient internet connectivity can act as an obstacle in the realization of several human rights, so can high-speed and neutral access act as a catalyst for social inclusion and economic prosperity. Recent studies have found a strong correlation between broadband availability, jobs, and GDP growth. A 10-percentage-point increase of broadband penetration in 2016 would have resulted in more than 806,000 additional jobs in 2019, or an average annual increase of 269,000 jobs. Moreover, higher broadband speeds at every increment (100, 150, 200 Mbps download) above the standard speed rate (25 Mbps download) result in a gain in jobs.¹⁸

Respect for human rights is by no means divorced from economic development. On the contrary, it sets the pathway for essential services to contribute more decisively toward social justice. This practice has been advanced for years by several companies worldwide who have committed to the implementation of the UN Guiding Principles on Business and Human Rights. **Section 5** of this report will highlight some of these experiences to capitalize on their learning curve.

Realizing digital equity as a human right entails applying a human rights lens throughout the process of broadband provision. This means embedding human rights principles and standards to every action concerned, namely ensuring (1) non-discrimination, (2) participation, (3) transparency, and (4) monitoring and accountability. A focus on the barriers around **broadband availability, accessibility, affordability, speed, and neutrality** is also of great analytical value. This focus sheds light on the ways in which lack of or deficient internet connectivity interplays

¹⁷ United Nations General Assembly, “Promotion and protection of the right to freedom of opinion and expression” (UN Document A/66/290, New York, 2011), 18. <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N11/449/78/PDF/N1144978.pdf?OpenElement>

¹⁸ Jack Fritz and Dan Littmann, *Broadband for all: charting a path to economic growth* (New York: Deloitte, 2021), 1. <https://www2.deloitte.com/us/en/pages/consulting/articles/bridging-the-digital-divide-with-broadband-for-all.html?id=us:2el:3pr:5gedge:eng:cons:042921>



with structural forms of exclusion based on race, ethnicity, gender, age, ability, and socioeconomic status.

This report seeks to bring such principles and analytical focus to the fore throughout the following pages.

3. Overview of Digital Equity in the City of Boston

Boston’s economic standing rises above the national average. The city enjoys a median household income¹⁹ higher than that of the US.²⁰ However, compared to the national and the state of Massachusetts’ averages, Boston does not outperform when it comes to broadband access. Concerningly, the city’s percentage of households without internet is higher compared to that of the state.²¹ Why has economic prosperity not translated into quality broadband access for all in the city? How has lack of or deficient access to the internet affected people’s lives? Who bears the most significant effects? How could the hidden potential of digital equity be unleashed to enhance the city’s economic prosperity?

The digital divide is selective because it obeys spatial distributions, which mirror long-standing social and economic inequalities. In other words, lack of or deficient access to reliable broadband and social exclusion are intertwined and reinforce each other.²² In the case of Boston, particularly, while universal broadband access is almost achieved in specific (more privileged) neighborhoods, low-income parts of the city and those whose residents are communities of color experience the digital divide disproportionately. Acknowledging this

¹⁹ Median household income of the City of Boston (in 2019 dollars): 71,115. US Census Bureau, “Quick Facts: Boston city, Massachusetts,” *United States Census Bureau*, accessed June 14, 2021, <https://www.census.gov/quickfacts/fact/table/bostoncitymassachusetts/INC110219>

²⁰ Median household income of the US (in 2019 dollars): 68,703. Jessica Semega et al. *Income and Poverty in the United States: 2019* (Washington DC: US Government Publishing Office, 2020), 1. <https://www.census.gov/content/dam/Census/library/publications/2020/demo/p60-270.pdf>

²¹ Percentage of households with computer, but no Internet subscription, as of 2019: US (7.2%); Massachusetts (4.6%); City of Boston (5.5%). “13 Connectivity Explorer,” *The Center of Internet as Infrastructure LCC*, accessed June 14, 2021, <https://i3cex.internet-is-infrastructure.org/sessions/new>

²² Massimo Ragnedda, *Enhancing Digital Equity, Connecting the Digital Underclass* (Cham: Palgrave Macmillan, 2020), 2.

complex relationship is crucial for promoting digital equity effectively, as it compels attention toward the multiplicity of barriers inhibiting people from accessing fixed high-speed internet.

The following maps provide an overview of broadband coverage in Boston, seen from a human rights lens. More specifically, the availability, accessibility, affordability, speed, and neutrality of internet are illustrated *alongside their relation to the city's income and racial composition*.

Information was drawn from the *I3 Connectivity Explorer* platform²³ (based on FCC data),²⁴ and further complemented with scholarship work, media, and nonprofit organization reports.

Testimonies of affected communities and Internet Service Providers delivered before the Boston Human Rights Commission will also inform our analysis.

Broadband Availability

Broadband service of at least the standard speed rate (25 Mbps) is available in every block of the City of Boston. Therefore, there is infrastructure throughout the entire city to serve at least such a speed. Nonetheless, *broadband availability decreases throughout the city as we consider higher speed rates*. That is to say, speed rates above 25 Mbps cannot be served in every neighborhood of the City of Boston. Specifically, speed rates of 100 Mbps download/100 Mbps upload—which have increasingly become a more adequate speed standard for current needs—are *not* available in 27.2% of Boston's populated blocks. This lack of availability of high-speed broadband has to do with the type of infrastructure some Internet Service Providers choose to deploy.

²³ "I3 Connectivity Explorer," *The Center of Internet as Infrastructure LCC*, accessed June 14, 2021, <https://i3cex.internet-is-infrastructure.org/sessions/new>

²⁴ Information is presented as of 2019 by census tract.

Speed rates of 100 Mbps download/100 Mbps upload—which have increasingly become a more adequate standard—are not available in 27.2% of Boston’s populated blocks.

Currently, eight ISPs serve the City of Boston. Not all of them are present in every one of the city’s census tracts at the same speed rates—given that they rely on different technologies to provide the service. More specifically, while the eight ISPs can provide the standard speed rate (covering the entire city), *only four of them offer speeds above 100 Mbps down/100 Mbps up.*

Table 1 shows the providers that serve the City of Boston at the standard speed rate, the technology (infrastructure) they

rely on, and the percentage of the city’s census tracts they cover.

Table 1. ISPs serving the City of Boston at the standard speed rate, the type of technology they rely on and the percentage of census tracts they cover.

Internet Service Provider	Technology Type (infrastructure)	Percentage of the city’s census tracts that it covers
Comcast	Cable	99.4%
Verizon New England Inc.	Fiber	93.9%
RCN	Cable and fiber	65.7%
Starry, Inc.	Fiber and fixed wireless	64.6%
netBlazr Inc.	Fiber and fixed wireless	53.6%
Cox Communications	Cable	0.6%
Netafy	Fixed wireless	0.6%
Southern Ohio Communication Services, Inc.	Fixed wireless	0.6%

Only four ISPs currently offer speeds of 100 Mbps download/100 Mbps upload or faster (**Table 2**). Notably, broadband at this speed rate is not available in 27.2% of Boston’s populated blocks, and whenever at hand, it is provided by just one incumbent. *In 48.9% of the city’s populated blocks, 100 Mbps internet is provided only by one ISP.* This is the case of Dorchester, Hyde Park, Jamaica Plain, Mattapan, Roslindale, and West Roxbury (**Figure 1**).

Table 2. ISPs serving the City of Boston at 100 Mbps download/100 Mbps upload speed rate, the type of technology they rely on and the percentage of census tracts they cover.

Internet Service Provider	Technology Type	Percentage of the city's census tracts that it covers (100 Mbps down/100 Mbps up)
Verizon New England Inc.	Fiber	93.9%
Starry, Inc.	Fiber and fixed wireless	64.6%
netBlazr Inc.	Fiber and fixed wireless	24.9%
Comcast	Fiber	2.2%

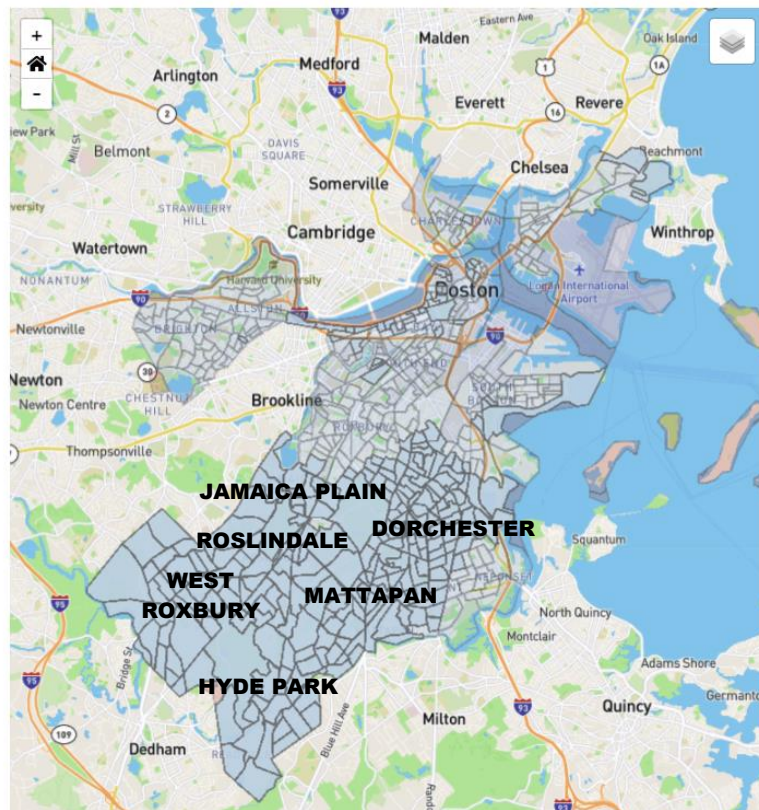
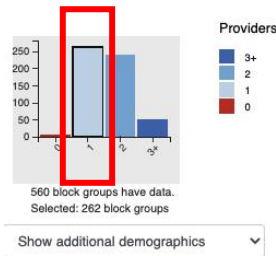


Figure 1. Location of the blocks where 100 Mbps download/100 Mbps upload speed internet is available by only one ISP in the City of Boston.

In 48.9% of the city's populated blocks, 100 Mbps download/100 Mbps upload internet is provided only by one ISP. This happens in Dorchester, Hyde Park, Jamaica Plain, Mattapan, Roslindale, and West Roxbury.

The fact that there are eight ISPs in the city could give a false impression that Boston enjoys full broadband availability. However, a closer look into the speed rates providers offer, the type of technology they rely on, and the percentage of the city's tracts that they cover reveal two important realities. First, given their level of coverage for the standard speed rate, Comcast and Verizon are Boston's major service providers. Furthermore, given that broadband speed is determined by the type of infrastructure, in Boston, high-speed rates are mainly available through Verizon due to its fiber infrastructure—as opposed to Comcast's cable (to date, fiber infrastructure is one of the fastest available internet technologies).²⁵

Broadband Accessibility

Even when broadband service of at least the standard speed rate is *available* in every block of the City of Boston, the service is still not *accessible* for thousands of families. Broadband accessibility entails that ISPs must ensure that all of their means of contact, language, and service requirements and processes are clear and inclusive for and respectful of all sections of the population, especially vulnerable or marginalized groups. As of 2019, 2,703 households (1% of Boston's total number of households) had *no broadband service at the standard speed rate* (25 Mbps).

²⁵ Rebecca Lee Armstrong and John Dilley, "The Consumers Guide to Internet Speed," *HighSpeedInternet*, March 23, 2021, <https://www.highspeedinternet.com/resources/the-consumers-guide-to-internet-speed>.

In addition, 62,868 households (22.7% of Boston’s total number of households) are *under-served*. This means that even when these households have internet access at the standard speed, their market options are limited to only 2 ISPs. This leaves just 76.3% of the city’s households to fall into the *well-served* category (have service at the standard speed rate with at least 3 ISPs).

As of 2019, 2,703 households (1% of Boston’s total number of households) had no broadband service at the standard speed rate.

Census tracts with the highest reported number of households with no internet access are in five neighborhoods, namely, Northwest Dorchester, Hyde Park, West Mattapan, Roxbury, and the western side of West Roxbury (**Figure 2**). Roxbury and Northwest Dorchester also accommodate the tracts with the lowest subscription rates.

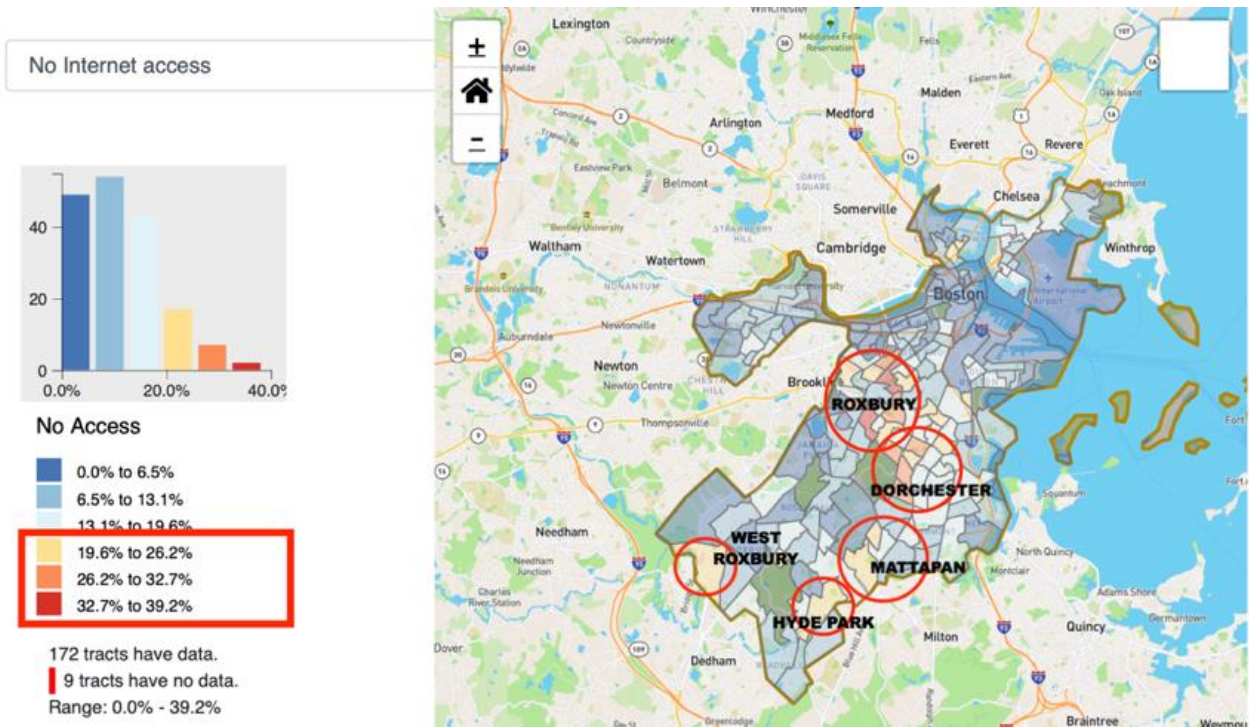


Figure 2. Location of census tracts experiencing the highest rates of no internet access in the City of Boston.

Census tracts experiencing the highest rate of no internet access correlated to low-income levels are in Roxbury (**Figure 3**). 49.8% to 82.1% of the population in Roxbury's tracts experiencing lack of internet access correlated to low-income levels self-define as non-White.

Census tracts experiencing the highest rate of no internet access correlated to low-income levels are located in Roxbury. This neighborhood also hosts a great proportion of the city's non-White population.

Furthermore, the greatest proportion of non-White population in the city (82.1-98.2%) lives in tracts exhibiting the highest reported rate of no internet access (West Dorchester, Mattapan, and Roxbury). Overall, the percentage of Black (9.3%) and Hispanic (6.8%) families without internet access is greater compared to that of White households (3.8%).

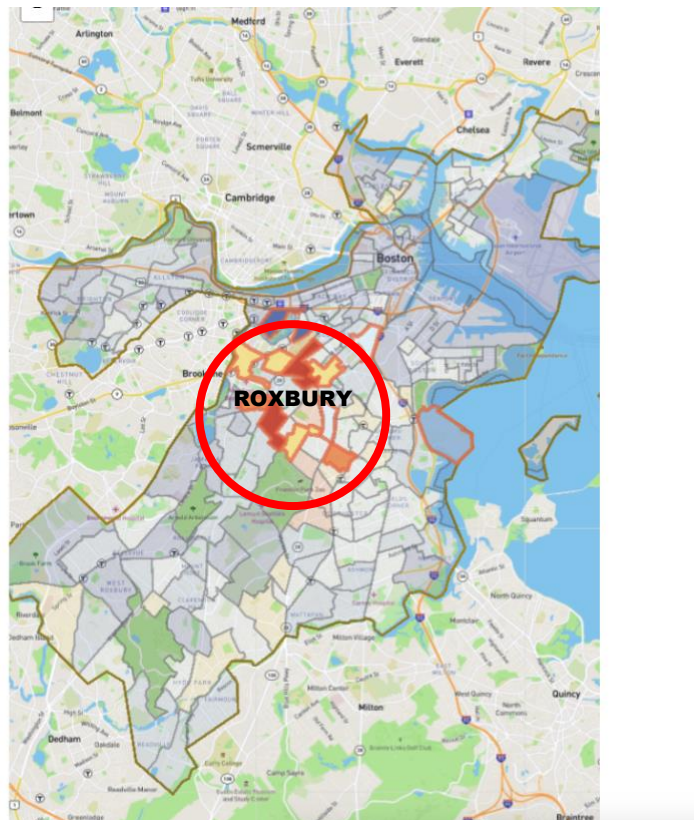
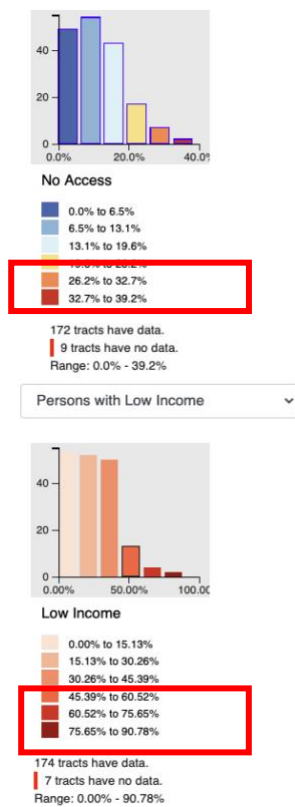


Figure 3. Location of the City of Boston's census tracts with no internet access correlated to low-income levels.

Another material barrier for internet access is *lack of computer equipment*. 9% of Boston’s households do not have a computer device. This figure is higher than the average of Massachusetts (8.6%). The census tract with the highest number of households without computer equipment is also located in Roxbury.

Moreover, tracts displaying the highest number of households without a computer device—which are in Northwest Dorchester and Roxbury—have the most significant proportion of non-White population (more than 49.8% of their respective populations self-define as non-White).

In the city, the percentage of Black (7.2%) and Hispanic (6.7%) families without internet access is greater compared to that of White households (4.3%).

Broadband Affordability

Affordability means that broadband prices should not disproportionately burden users.

Compared to Europe's and Asia's main cities, monthly broadband prices are higher in the US, regardless of network technology. The average monthly price in the United States is \$68.38—higher than the average price for all North America at \$61.46, Europe at \$44.71, and Asia at \$62.41. Moreover, modem fees can add 75% to a monthly bill in the US, compared to 30% abroad.²⁶

In the case of the City of Boston, lack of competition affects internet prices. According to a study conducted by the Wall Street Journal in 2019, Comcast customers in Jackson, MI., where Comcast has competition, pay \$58 for 60 Mbps and get a \$24 discount. But 60 Mbps Comcast subscribers in Boston, where Comcast is the only provider, pay \$73 and get a \$14 discount.²⁷

²⁶ Becky Chao and Claire Park, *The Cost of Connectivity 2020* (Washington DC: New America, 2020), 23. https://d1y8sb8igg2f8e.cloudfront.net/documents/The_Cost_of_Connectivity_2020_XatkXnf.pdf

²⁷ Inti Pacheco and Shalini Ramachadran, “Do You Pay Too Much for Internet Service? See How Your Bill Compares,” *The Wall Street Journal*, December 24, 2019, <https://www.wsj.com/articles/do-you-pay-too-much-for-internet-service-see-how-your-bill-compares-11577199600>

In the City of Boston, lack of competition and service requirements (such as the types of agreements) affect internet prices.

Moreover, affordability is closely tied to other barriers inhibiting people from using fixed high-speed internet, such as how the service requirements and processes are tailored (broadband accessibility). For example, in the city, **prices of broadband services are conditioned to fixed-term contracts for which low-income families are not in a financial position to commit.** It follows that whenever families opt for a no-term agreement, prices increase significantly even for the same speed rate. According to an inquiry made in March 2021 through Comcast’s website by this report’s research team, as of that month, Comcast’s Xfinity price in Boston for “download speeds up to 100 Mbps” internet was \$54.99 per month with a 12-month term agreement—compared to \$80.95 per month, for the same speed rate but with no term agreement.²⁸

The fact that barriers to broadband service do not act in isolation could help explain the nationwide trend as to why few users take advantage of reduced-cost programs.²⁹ A survey conducted in the frame of a study prepared for the City of Cambridge, MA, this year unveiled that just 9% of the respondents were receiving broadband subsidies under the FCC’s Lifeline Program (**Section 3** explores this program and other initiatives

Broadband affordability is tied to other barriers, such as how the service requirements and processes are tailored. For example, broadband prices are conditioned to fixed-term contracts for which low-income families are not in a financial position to commit.

²⁸ This report’s research team made a price inquiry through Comcast’s Xfinity website on March 11, 2021. Particularly, we asked for the deals available in a specific location in Roxbury, MA. “Great deals are just around the corner. Just tell us where you’d like Xfinity service,” *Xfinity*, accessed March 11, 2021, <https://www.xfinity.com/learn/internet-service>

²⁹ Victoria Rideout and Vikki S. Katz, *Opportunity for all? Technology and learning in lower-income families* (New York: The Joan Ganz Cooney Center at Sesame Workshop, 2016), 11. https://www.joanganzcooneycenter.org/wp-content/uploads/2016/01/jgcc_opportunityforall.pdf

targeting the digital divide). In the same vein, 50% of the respondents who were Comcast customers responded that they were unaware of the company’s Internet Essentials³⁰ deal.³¹

Even though such unawareness is often attributed to weak advertising campaigns, it would not be unreasonable to analyze how other barriers interplay with these programs. The same study revealed that *Comcast offers modest upload speeds and prices increase sharply after promotional periods end.*³²

Moreover, broadband customers have recently raised concerns about companies like Verizon using government subsidies (such as the Emergency Broadband Benefit) as **an opportunity to upsell data plans**, thereby also increasing users’ monthly bill. Customers also pointed to the fact that the company’s sign-up process for the program is cumbersome and should be more accessible.³³ Past research conducted to understand why broadband subsidies are underutilized by ethnic minority groups also highlights the fear of being stigmatized by service providers as one of the causes.³⁴

Broadband Speed

In addition to broadband availability, accessibility, and affordability, *speed and net neutrality* also constitute concerns behind our city’s digital divide. Regarding the former, *users who do*

³⁰ Over the past 10 years, Comcast has offered its “Internet Essentials” plan. Since 2011, this plan promises consumers—particularly low-income families—affordable Internet for USD 9.95 per month (+ taxes), no term contract, no credit check, and 2 months for free. “Low cost, high-speed Internet at home,” Internet Essentials from Comcast, accessed June 14, 2021, <https://www.internetessentials.com/>

³¹ CTC technology & energy, *Digital Equity in Cambridge: Data and Strategic Recommendations* (Kensington: Columbia Telecommunications Corporation, 2021), 12. <https://www.cambridgema.gov/-/media/Files/citymanagersoffice/cityofcambridgedigitalequitystudymarch2021.pdf>

³² CTC technology & energy, 9.

³³ Geoffrey A. Fowler, “The government has a program to cut your Internet bill. Verizon was using it to force you onto a new data plan,” *The Washington Post*, May 21, 2021, <https://www.washingtonpost.com/technology/2021/05/17/verizon-emergency-broadband-benefit/>

³⁴ J.C. Araque et al., “Computer usage and access in low-income urban communities,” *Computers in Human Behavior* 29 (2013): 1394. <http://dx.doi.org/10.1016/j.chb.2013.01.032>

have access to affordable internet are not getting the speed rates they contract. This leads to having access to a service that is unable to fulfill residents’ needs.

Concerningly, the bandwidth Boston residents receive is often slower than the one their ISP offers. For example, according to the speed tests registered by the *I3 Connectivity Explorer* platform, only 62% of the speed tests conducted in the city for over one year (April 2020 to January 2021) proved actual speeds to meet target speeds of 25 Mbps (below MA average of 73%) (Figure 4).

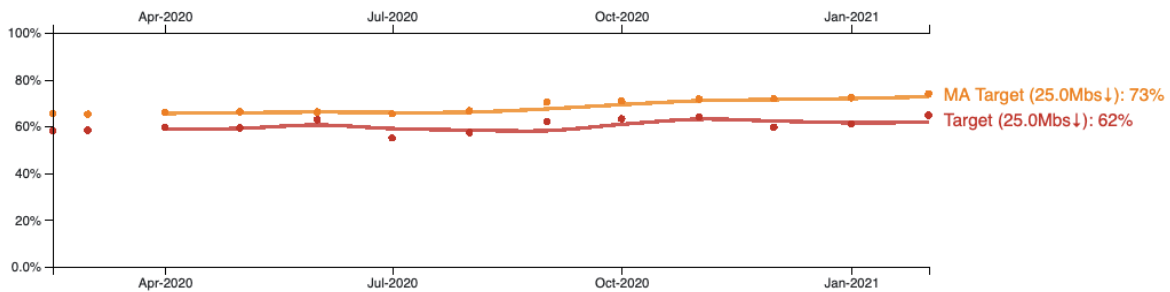


Figure 4. Speed tests conducted in the City of Boston from April 2020 to January 2021, which proved that actual broadband speeds met target speeds (25 Mbps download).

Put another way, **Figure 4** also shows that the *remainder 38% of users who conducted the speed tests got fewer Mbps than those they contracted.*

During the public hearing on the digital divide convened by the Boston Human Rights Commission—which took place on April 28, 2021—several residents raised concerns over broadband speeds. Broadband customers and members of nonprofit organizations brought to the fore how problematic is to get *weak* internet connection several times a day. Constantly, when they teach a class, monitor their parent’s health through digital devices, attend online school, or play bingo to avoid isolation during the COVID-19 pandemic, their connection becomes unstable. As these activities are interrupted by deficient internet connection, people

cannot realize and develop the essential aspects of their lives to which such activities are closely related.³⁵

As the public hearing showed, how Boston residents are affected by insufficient bandwidth and discontinuous internet access is greatly determined by race, ethnicity, gender, age, disability, health, and socioeconomic status. Crucially, these axes of inequality are intersectional. For example, by keeping residents engaged with their peers and family members, high-speed broadband access is instrumental for addressing isolation in senior residents.

The functioning of devices for monitoring a variety of health conditions depends directly on broadband access and sufficient and continuous speeds. Therefore, high-speed internet has come to be a determinant of health.

Further, the functioning of devices for monitoring various health conditions, including Alzheimer’s disease, and for promoting self-care for care givers depends directly on broadband access and on sufficient and continuous internet speeds.

Insufficient or discontinuous broadband speeds also impact the lives of residents with disabilities. Weak or interrupted services prevent deaf persons from using the digital tools that enable their interaction with their communities by making the world universally accessible—like video streaming closed captions.

Weak or interrupted broadband services prevent persons with disabilities from using the digital tools that enable their interaction with their communities.

High-speed internet has come to be a determinant of health. But unfortunately, 80% of Boston’s older households and a disproportionate number of residents with disabilities living in poverty face greater barriers to access health-essential services.³⁶

³⁵ “City of Boston Human Rights Commission Public Meeting 4-28-21,” Boston City TV, April 28, 2021, video, 1:26:35, <https://www.youtube.com/watch?v=3xWY83fCZY>

³⁶ Testimony provided by Little Brothers Friends of the Elderly at the public hearing on the digital divide convened by the Boston Human Rights Commission, April 28th, 2021 (see footnote 35).

This scenario in Boston fits in the national trend. A 2019 study of The Wall Street Journal found that low-income areas and high-income areas pay similar median monthly costs—about \$66—for stand-alone internet, but poorer areas get 40% slower speeds. Nationally, customers in high-income areas get a median speed of 150 Mbps, while the median speed was 100 Mbps in low-income areas.³⁷

Net Neutrality

Net neutrality is the principle that all data traffic on a network should be treated indiscriminately. In other words, Internet Service Providers must provide access to all sites, content, and applications at the same speed, under the same conditions, without deliberately blocking, slowing down, speeding, or giving preference to any content. The battle about net neutrality revolves around the regulation of ISPs and the role of government (federal and state) to oversee certain managing practices that impinge on internet users' rights.³⁸

Alarming, *Massachusetts has not yet enacted net neutrality legislation*. Therefore, Boston residents lack protection *against practices such as band throttling and censorship*.³⁹ In response to the FCC's setback to net neutrality, in 2018, the Massachusetts Senate created a Special Committee on Net Neutrality to coordinate a thorough investigation on the impacts of such an order. In March 2018, the Committee issued a report that found that the FCC's *Restoring Internet Freedom Order* "opens the door to network management practices that could harm consumer choice, technological innovation, and the free flow of information on

³⁷ Inti Pacheco and Shalini Ramachadran, "Do You Pay Too Much for Internet Service? See How Your Bill Compares," *The Wall Street Journal*, December 24, 2019, <https://www.wsj.com/articles/do-you-pay-too-much-for-internet-service-see-how-your-bill-compares-11577199600>

³⁸ The FCC adopted net neutrality rules in 2015 but overturned them in 2017. For a contextualization of the net neutrality legal battle please see "The Federal Net Neutrality Debate: Access to Broadband Networks," *Congressional Research Service*, February 24, 2021, <https://fas.org/sgp/crs/misc/R40616.pdf>

³⁹ As of 2021, nine states have introduced net neutrality legislation. The nine states are Connecticut, Kentucky, Missouri, New Jersey, New York, Oregon, South Carolina, Texas, and Washington. NCSL, "Net Neutrality 2021," National Conference of State Legislatures, January 1, 2021, <https://www.ncsl.org/research/telecommunications-and-information-technology/net-neutrality-2021-legislation.aspx>

the internet."⁴⁰ The Committee thus, recommended that the Massachusetts Senate should take legislative action. Nonetheless, Massachusetts has not done so.

In 2018, the Massachusetts Senate passed [Bill S.2610](#) (sponsored by the Committee on Ways and Means) that would create a registry of ISP that would make public their practices concerning broadband internet access service quality and network management. However, by rejecting to regulate business practices directly, this Bill does not impose state-level net neutrality measures.⁴¹ On July 23, 2019, the Bill was passed on to the State House, where it was referred to the Committee on House Ways and Means. To date, the House has not approved the Bill yet.

In March 2021, state representatives David M. Rogers (Cambridge-D) and Andres X. Vargas (Haverhill-D) presented [Bill H.134](#), which aims to ensure that all commonwealth customers of ISP have access to an open and neutral internet. The House referred the proposal to the Joint Committee on Advanced Information Technology, the Internet, and Cybersecurity.⁴² Also, state senator Cynthia Stone Creem (First Middlesex and Norfolk-D, *Majority Leader) presented [Bill S.2146](#) to promote net neutrality and consumer protection (referred to the Committee on Telecommunications, Utilities, and Energy).⁴³ Both Bills are currently under review.

⁴⁰ Senate of the Commonwealth of Massachusetts, *Report of the Special Senate Committee on Net Neutrality entitled: Net Neutrality and Consumer Protection, A Commonwealth Concern* (Boston: The Commonwealth of Massachusetts, 2018), 4. <https://malegislature.gov/Bills/190/s2376>

⁴¹ Senate of the Commonwealth of Massachusetts, "Bill S.2610," *The 192nd General Court of the Commonwealth of Massachusetts*, July 16, 2018, <https://malegislature.gov/Bills/190/S2610>

⁴² Senate of the Commonwealth of Massachusetts, "Bill H.134," *The 192nd General Court of the Commonwealth of Massachusetts*, accessed June 14, 2021, <https://malegislature.gov/Bills/192/H134>

⁴³ Senate of the Commonwealth of Massachusetts, "Bill S.2146," *The 192nd General Court of the Commonwealth of Massachusetts*, accessed June 14, 2021, <https://malegislature.gov/Bills/192/S2146>

As of March 2021, nine states across the country have introduced net neutrality legislation. Massachusetts is not one of them.

Without state legislation, the door remains open for implementing management practices in Boston and across MA, which could curtail the free flow of information on the internet. If net neutrality is not ensured through state legislation, an ISP can throttle the bandwidth (which means that the provider can effectively decide what information residents are exposed to) limiting people's rights to information and freedom of expression. *Throttling* can also be used to actively slow users' download and upload contracted speed rates, leading residents to seek upgrades to their services to avoid internet traffic slowdowns.

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4. Toward Digital Equity in the City of Boston

The COVID-19 pandemic brought to the surface the significant limitations posed by lack of broadband access across the country. As the crisis unfolded, concerns about the impacts of the digital divide on people’s lives made their way up to the headings of national and local media outlets.⁴⁴ To overcome the difficulties thwarting virtual learning, home-office, and all of the activities forced to online formats, the public sector, private service providers and nonprofit organizations put in place several *emergency measures* that mostly addressed broadband *affordability* barriers. The creation of partnerships between these stakeholders to offer free or heavily discounted internet deals has been a common formula across the country.

While such a model has provided cities such as Boston the possibility to react to the COVID-19 emergency over a relatively short period (as split costs and the need for no additional infrastructure preclude high upfront public disbursements), its limited scope on broadband affordability eclipses the importance of addressing the multiple barriers behind the digital divide in Boston—as the previous section showed.

Emergency measures to expand broadband access during the COVID-19 pandemic mostly addressed *affordability* barriers (free or heavily discounted internet deals).

Given how recent these measures are, this section starts by providing a brief overview of those impacting the City of Boston. Subsequently, it moves on to describe the initiatives that were in place before the pandemic. In both cases, the recount touches on measures implemented by

⁴⁴ Douglas Broom, “Coronavirus has exposed the digital divide like never before,” *World Economic Forum*, April 22, 2020, <https://www.weforum.org/agenda/2020/04/coronavirus-covid-19-pandemic-digital-divide-internet-data-broadband-mobbile/>

the public sector (federal, state, and local governments), private broadband providers and nonprofit organizations.

Emergency measures to expand broadband access during the COVID-19 pandemic

The FCC introduced the Emergency Broadband Benefit in May 2021. The program provides discounts of up to \$50 per month toward broadband services for eligible households and up to \$75 per month for households on qualifying Tribal lands. Eligible households can also receive discounts to purchase laptops, desktop computers, or tablets from participating providers. Having an income below 135% of the Federal Poverty Guidelines or participating in certain assistance programs makes households eligible for these subsidies.⁴⁵

At the state level, the Government of Massachusetts has also spearheaded several initiatives. Launched at the beginning of January 2021 by the Massachusetts Broadband Institute in partnership with the Executive Office of Labor and Workforce Development and service providers across the Commonwealth (including Comcast, Charter, and Verizon), *Mass Internet Connect* offers subsidies and devices to job seekers enrolled in the *MassHire* system. This program has been extended through December 31, 2021.⁴⁶

Moreover, in April 2020, the state government launched the *Commonwealth's Last Mile* broadband expansion program. This program aimed to address the economic impact of COVID-19 by partnering with ISPs to expand free community Wi-Fi hotspots across the state. The MBI extended the wireless hotspot program in underserved MA towns through June 30, 2021.⁴⁷

⁴⁵ Consumer and Governmental Affairs, "Emergency Broadband Benefit," *Federal Communications Commission*, May 26, 2021, <https://www.fcc.gov/broadbandbenefit>

⁴⁶ "Mass Internet Connect," *Massachusetts Broadband Institute*, accessed June 14, 2021, <https://broadband.masstech.org/recovery-plan-programs/mass-internet-connect>

⁴⁷ "Expanding Wireless Broadband Hubs in Unserved Communities," *Massachusetts Broadband Institute*, accessed June 14, 2021, <https://broadband.masstech.org/wifi>

As far as is related to the private sector, several ISPs in Boston have signed onto the “Keep Americans Connected Pledge,” through which they committed (1) not to terminate the service to any residential or small business customers because of their inability to pay their bills, (2) waive any late fees that they incur, and (3) open its Wi-Fi hotspots to any American who needs them.⁴⁸ In connection, the City of Boston habilitated a website with information⁴⁹ about resources to support residents’ internet connectivity and technology needs during the coronavirus outbreak. It displays information about the special offers for low-income communities that internet companies offer in response to the pandemic.

During the public hearing convened by the Boston Human Rights Commission on May 19, 2021, representatives of Comcast, Starry, and Verizon reiterated these providers’ willingness to support customers facing financial hurdles during the pandemic. They offered a recount of the specific packages each of these ISPs put in place in the context of the Keep Americans Connected Pledge. Debt-forgiveness, reduced costs, and fee waivers were mentioned as the common actions.

Nonprofit and community organizations also supported residents who struggled with internet access during the pandemic. *Tech Goes Home*, for example—a Boston-based nonprofit dedicated to addressing the digital inequities that pose a barrier to opportunity and success for students, workers, and families across Greater Boston⁵⁰—partnered with NETSCOUT Systems,

⁴⁸ Four out of the eight ISPs that serve the City of Boston signed the Keep Americans Connected Pledge. They include Comcast, Cox Communications, RCN, Starry, and Verizon. Please, see “Chairman Pai launches the Keep Americans Connected Pledge,” FCC News from the Federal Communications Commission, March 13, 2020, <https://docs.fcc.gov/public/attachments/DOC-363033A1.pdf>

⁴⁹ Innovation and Technology, “Internet Connectivity and Technology Supports during COVID-19 Response,” *City of Boston*, May 1, 2020, <https://www.boston.gov/news/internet-connectivity-and-technology-supports-during-covid-19-response>

⁵⁰ “Tech Goes Home is dedicated to addressing the digital inequities that deny people the opportunity to succeed,” *TGH tech goes home*, accessed June 14, 2021, <https://www.techgoeshome.org>

Inc. to provide digital devices, internet access, and digital skills training to more than 160 households in Roxbury.⁵¹

Policies for expanding broadband access put in place before the COVID-19 pandemic

The *Lifeline Program* is a landmark program of the federal government to expand broadband access for low-income consumers. It began in 1985 with discounts on phone services. Through the 2016 Lifeline Modernization Order, the FCC included broadband as a support service in the Lifeline program.⁵² The program currently offers a \$9.25 benefit toward household bills whose income is either 135% or less than the federal poverty guidelines or participate in federal assistance programs.⁵³

Efforts to promote digital equity have also arisen at the local level. Particularly, regarding the expansion of broadband services, **the City of Boston has implemented several projects geared toward creating a more competitive broadband market in the city and increasing the availability of high-speed internet.** The current administration is streamlining efforts related to broadband infrastructure across city departments. More specifically, such efforts consist on making the city's fiber assets more accessible to companies, attracting new internet competition, removing barriers for multiple ISP to serve apartment buildings, extending the Boston Fiber Optic Network (BoNET), and expanding Wicked Free Wi-Fi within Boston's 20 Main Street districts.⁵⁴

⁵¹ "Massachusetts Nonprofit Tech Goes Home and NETSCOUT Team Up to Expand Digital Access in Greater Boston Community," *Business Wire*, December 9, 2020, <https://www.businesswire.com/news/home/20201209005229/en/Massachusetts-Nonprofit-Tech-Goes-Home-and-NETSCOUT-Team-Up-to-Expand-Digital-Access-in-Greater-Boston-Community>

⁵² Wireline Competition, "Lifeline Program for Low-Income Consumers," *Federal Communications Commission*, June 8, 2021, <https://www.fcc.gov/general/lifeline-program-low-income-consumers>

⁵³ "Get Connected," Universal Service Administrative Co., accessed June 14, 2021, <https://www.lifelinesupport.org>

⁵⁴ Innovation and Technology, "Broadband and Digital Equity," *City of Boston*, April 24, 2020, <https://www.boston.gov/innovation-and-technology/broadband-and-digital-equity>

However, expanding infrastructure and enhancing competition in the city’s broadband market continue been persistent challenges over the past years. In response to residents’ complaints about high cable prices, in 2015, the Boston Council issued a resolution requiring regulators to encourage service providers to offer fiber internet and open invitations to other broadband providers to enable competition.⁵⁵ At that moment, Comcast and RCN were *the only* actors in the market. A year after the resolution was issued, Verizon announced its entrance to the city. The company brought its fiber-optic broadband service with a commitment to spend \$300 million over the following six years.⁵⁶

Furthermore, in 2017, the City of Boston established the *Digital Equity Fund*. The Fund awards grants ranging from \$5,000 to \$35,000 to local community organizations that help people use the internet, digital skills, digital tools, and support households who do not subscribe to broadband access to this service.⁵⁷ **By supporting the work of nonprofit organizations to address some of the barriers behind the lack of access to broadband services, this initiative has become a pathway for the active engagement of residents in bridging the city’s digital divide.** For example, in 2019, the Fund disbursed \$100,000 in grants combined to *La Alianza Hispana*, *Mujeres Unidas Avanzando*, and *South End Technology Center*.⁵⁸

La Alianza Hispana empowers individuals and strengthens the Latino community by leveraging partnerships to provide social, educational, health services, and technology resources. *Mujeres Unidas Avanzando* helps Latinas to become self-sufficient and assume leadership roles within the community. *The South End Technology Center* vows to facilitate the use of technology in

⁵⁵ City of Boston, “Fios in the COB,” *City Council Video Library*, October 14, 2015, video, 1:13:45, https://www.cityofboston.gov/citycouncil/cc_video_library.asp?id=9899

⁵⁶ Barb Darrow, “Competition at Last: Verizon to Bring Fios to Boston,” *Fortune*, April 13, 2016, <https://fortune.com/2016/04/13/verizon-to-bring-fios-to-boston/>

⁵⁷ Innovation and Technology, “Digital Equity Fund,” *City of Boston*, April 30, 2021, <https://www.boston.gov/innovation-and-technology/digital-equity-fund>

⁵⁸ Innovation and Technology, “\$100,000 in grants to support digital equity in Boston,” *City of Boston*, October 17, 2019, <https://www.boston.gov/news/100000-grants-support-digital-equity-boston>

ways that encourage individuals to become innovators and producers, thereby helping residents who are at an increased risk of joblessness.⁵⁹

Supporting the work of local organizations has been crucial for addressing some of the barriers behind the city’s digital divide.

The involvement of community organizations has been crucial for overcoming some of the barriers thwarting digital equity in the city. However, given the reliance of broadband services on large-scale infrastructure, the role of private providers is also necessary for expanding access to affordable, high-speed, and neutral fixed broadband. In other words, due to the high amount of economic investment and the complexity of the logistics inherent to

broadband infrastructure development, the involvement of private actors has come to be an essential part in broadband governance.⁶⁰ Nonprofit organizations provide computer devices or expand training on digital skills—which are key drivers of the first-level and second-level digital divides—but it often falls out of their capacity to build internet infrastructure.

Some private internet providers have also added to efforts aimed at closing the digital gap. They have focused on making their services more affordable. One of the most long-standing initiatives is Comcast’s Internet Essentials package, which has offered, since 2011, affordable internet for \$9.95 per month.⁶¹ Nonetheless, as **Section 3** of this report contends, given that affordability is closely tied to several other barriers inhibiting residents from accessing and using fixed broadband, any analysis of the ISPs’ initiatives in Boston should

Affordability is not the only barrier to expanding internet access. ISPs’ initiatives aimed at making broadband more affordable should also provide speed rates that meet households’ basic needs.

⁵⁹ Innovation and Technology.

⁶⁰ Internet Society, *Internet Society Global Internet Report 2014* (Geneva: Internet Society, 2014), 45. <https://www.internetsociety.org/wp-content/uploads/2017/08/Global-Internet-Report-2014-0.pdf>

⁶¹ “Low cost, high-speed Internet at home,” *Internet Essentials from Comcast*, accessed June 14, 2021, <https://www.internetessentials.com/>

disregard how these efforts interplay with the digital divide’s multiplicity of drivers. The realization of digital equity as a human right is barely possible whenever just one of these obstacles are addressed.

Hence, the quest for digital equity compels a look into how the affordability vowed by Comcast’s Internet Essentials package plays out with the deal’s speed rate capacity to fulfill the actual needs of an average household. From March 1, 2021, Comcast announced that new and existing users would automatically receive download speeds of up to 50 Mbps and uploads up to 5 Mbps. This was the second time in recent months that Internet Essentials has seen a speed boost—Comcast pushed the package to 25/3 Mbps (the minimum speed rate according to the FCC) as a response to COVID-19 in March 2020.⁶²

However, while Comcast advertises this recent speed increase to be “high-speed internet,” a 50 Mbps download/5 Mbps upload speed *is not enough* for accommodating the digital needs of a family of four. According to an estimation made by this report’s research team using the BroadbandNow’s bandwidth calculator, a family of four would require a minimum of 114 Mbps download speed considering that two persons are telecommuting (working from home), another person is attending online classes, and the fourth person is either watching videos or videoconferencing.⁶³

The Federal Communication Commission’s Speed Guide also supports this report’s assertion that the Internet Essential’s new speed falls short of fulfilling the current needs of an average household of four. To illustrate this point, based on such a Guide, **Table 3** estimates the minimum download speed required for performing the activities that—due to contemporary social dynamics—have come to be considered as essential in the daily lives of a family of four.⁶⁴

⁶² Daniel Cooper, “Comcast doubles the speed of its \$10 Internet Essentials package,” *Engadget*, February 2, 2021, <https://www.engadget.com/comcast-digital-literacy-boost-internet-essentials-speed-150034948.html>

⁶³ “Speed Calculator,” *BroadbandNow*, accessed May 4, 2021, <https://broadbandnow.com/bandwidth-calculator>

⁶⁴ Consumer and Governmental Affairs, “Broadband Speed Guide,” *Federal Communications Commission*, February 5, 2020, <https://www.fcc.gov/consumers/guides/broadband-speed-guide?contrast=>

Table 3. Estimation of minimum download speeds required by activities now considered essential in the daily lives of a family of four, as per the FCC’s Speed Guide.⁶⁵

Person	Activity	Minimum download speed required
1 – Working parent	Telecommuting	25 Mbps
2 – Working parent	Telecommuting	25 Mbps
3 – Student	On-line learning	25 Mbps
4 – Little kid	Gaming	4 Mbps
Total		79 Mbps

Though neither the BroadbandNow’s speed calculator nor the FCC’s Speed Guide assesses upload speeds, the importance of knowing the minimum upload capacity to enable basic households’ needs should not be undermined. The upload capacity supports the use of video chat, videoconferencing, online-learning platforms, and the upload of high-resolution format images or files—activities inherent to the everyday tasks of students, teachers, small businesses, and home-based professionals, among others. By some accounts, upload speeds between 25 Mbps and 50 Mbps are required to perform some of these tasks.⁶⁶

Our download and upload speed estimations are consistent with current political calls to the FCC to change its definition of high-speed broadband and raise its standard speed rate to 100 Mbps. Petitioners are aware that speed rates of 25 Mbps down/3 Mbps up—not even 50 Mbps/5 Mbps up—are no longer sufficient for a senior, farmer,

The minimum download and upload speeds required for performing daily activities of an average family go around 100 Mbps/50 Mbps.

⁶⁵ Analysis conducted by this report’s research team based on Consumer and Governmental Affairs, “Broadband Speed Guide,” *Federal Communications Commission*, February 5, 2020, <https://www.fcc.gov/consumers/guides/broadband-speed-guide?contrast=>

⁶⁶ Peter Christiansen, “What Is a Good Download and Upload Speed?,” *HighSpeedInternet*, March 17, 2021, <https://www.highspeedinternet.com/resources/what-is-a-good-download-upload-speed>

student, or family to connect and conduct ordinary activities.⁶⁷

Hence, **while Comcast’s Internet Essential package increases affordability and its recently announced speed increase signals the company’s acknowledgment of the increasing needs of users, the initiative is not likely to contribute to digital equity in a compelling manner.** The package’s insufficient speed cap may impede people’s due execution of online tasks, thereby excluding them digitally. Realizing digital equity as a right requires that barriers of broadband availability, accessibility, affordability, speed, and neutrality be overcome.

This section has provided a brief overview of the initiatives in place (before and during the COVID-19 pandemic) to promote the expansion of broadband access. The emphasis of both long-standing initiatives and emergency measures on free or heavily discounted internet deals (broadband affordability) has seldom allowed capturing how other barriers contribute to the digital divide.

The recount has also laid bare the importance of coordinated action between the public sector (federal, state, and local governments), private broadband providers, and nonprofit organizations. Each of these actors plays a valuable role in the quest for digital equity. Although there remain some windows of opportunity for improvement in high-speed, and neutral broadband services, the willingness to capitalize on the lessons learned to date is a remarkable aspect across all stakeholders.

Acknowledging digital equity as a human right is a major step to aligning everyone’s action toward eradicating all barriers leading to digital exclusion. Applying the human rights principles and standards throughout the broadband provision process sheds light on the multiple barriers

⁶⁷ Please, see Karissa Bell, “Senators ask the FCC to change the definition of high-speed broadband,” *Engadget*, March 4, 2021, https://www.engadget.com/senators-fcc-change-definition-high-speed-broadband-222150947.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAANAN9aXtPrLMoC9I6dG231dFsIMdkvw_uX0nVpRzTK8_R9wDWMQ5N61ooXh4-dIXCBxxNrO9OfGh3PYI8lBityiZw4K4lOci8kDYkc_4q2j1LO4pgOHUsD81orvwH2shQGM3sCsEJ_YmhldRxe9HBvW6q3S3M6orKP7w1aQiklt8



behind the problem and how they are connected to structural forms of oppression along racial, gender, ethnicity, age, and ability lines. The next section illustrates how some initiatives that have implemented such a lens have made progress in expanding broadband, especially for the benefit of less privileged population groups.

5. The Way Forward

Boston is a Human Rights City. In 2011, the Boston City Council declared the city “a model for communities around the world to witness practical ways in which the human rights framework can make every citizen a partner of sustainable change.”⁶⁸ Against the current backdrop in which digital disparities remain, applying a human rights approach to realizing digital equity as a human right is part of this city’s vital commitment.

Achieving universal access to quality, affordable, high-speed, and neutral broadband in Boston is not a distant aspiration. As the previous sections have highlighted, the three levels of government, private broadband providers, nonprofit organizations, and community members have shown a willingness and a remarkable potential to keep up with the challenges that the digital age demands. By embedding the human rights principles of non-discrimination, participation, transparency, monitoring, and accountability throughout the process of broadband provision, the fulfillment of everyone’s right to digital equity can soon become a reality in the city. Further, not losing sight of the barriers around broadband availability, accessibility, affordability, speed, and neutrality, and how they intersect with each other is also valuable guidance for materializing digital equity.

Some cities and providers across the US have already successfully made steps in that direction. The following sections identify good practices and provide some recommendations.

Review of Good Practices

(1) Municipal broadbands help boost internet availability, accessibility, affordability, and speed.

Local governments have played a critical role in expanding high-speed broadband. More

⁶⁸ Boston City Council, “Resolution proclaiming Boston as a Human Rights City,” *City of Boston*, April 13, 2011, https://www.umb.edu/editor_uploads/images/sgisd_humanrights/Boston_A_Human_Rights_City_Resolution.pdf

specifically, in markets where private competition is anemic, whether because of regulatory barriers to entry or the high fixed costs of infrastructure investment, several US towns and cities have built their own network to provide service to their residents.⁶⁹

By various accounts, community-owned providers are more effective at delivering fast, affordable, and reliable internet.⁷⁰ According to BroadbandNow, internet prices in states that do not have municipal restrictions are lower on average as compared to those in states where municipal-owned networks are restricted.⁷¹

City-owned broadbands have demonstrated improved broadband availability, accessibility, affordability and speed.

In 2010, the municipal broadband model marked a turning point in internet access in the US as it made possible the integration of high-speed optic fiber broadband. Chattanooga's publicly-owned Fiber-to-the-Home network (Electric Power Board, EPB) began offering its residents and businesses a 1 gigabit per second tier of internet access. As a result, Chattanooga, Tennessee, was the first "gigabit city" in the country.⁷²

According to the I3 Connectivity Explorer platform, a higher percentage of Chattanooga's census tracts are well-served at standard speed rates compared to Boston's (90% vs.

⁶⁹ The Executive Office of the President, *Community-based Broadband Solutions* (Washington DC: The White House, 2015), 13. https://muninetworks.org/sites/www.muninetworks.org/files/White-House-community-based-broadband-report-by-executive-office-of-the-president_1.pdf

⁷⁰ Christopher Mitchell, "How Telecom Monopolies are Blocking Better Internet Access, and What We Can Do About It," *Institute for Local Self-Reliance*, January, 2021, https://cdn.ilsr.org/wp-content/uploads/2021/01/SLPG_Broadband.pdf

⁷¹ As for 2020, municipal broadband was outlawed in 22 states. Massachusetts does not restrict this model. Please, see Tyler Cooper, "Municipal Broadband Is Restricted In 18 States Across The US In 2021," *BroadbandNow*, May 3, 2021, <https://broadbandnow.com/report/municipal-broadband-roadblocks/>

⁷² Patrick Lucey and Christopher Mitchell, *Successful Strategies for Broadband Public-Private Partnerships* (Minneapolis: Institute for Local Self-Reliance, 2016), 5. <https://ilsr.org/wp-content/uploads/downloads/2016/08/PPP-Report-2016-1.pdf>

88.9%).⁷³ Moreover, the price per 1 Mbps/month in Chattanooga is \$0.19, a figure lower than Boston's \$2.19.⁷⁴ **Chattanooga's fiber network's availability, accessibility, affordability, and speed have helped the city attract and boost a distinctive tech ecosystem.** For example, local entrepreneurs have organized Lamp Post, a venture incubator that provides capital and mentorship to startups. As of 2015, Lamp Post had over 150 employees in a 31,000 square foot office space in downtown Chattanooga.⁷⁵

Chattanooga's owned broadband has also delivered high economic benefits for the city. An independent study found that the city-owned fiber network has given Chattanoogaans a \$2.69 billion return on investment in its first decade.⁷⁶

(2) *Non-discrimination, participation, and transparency within public-private partnerships.* In 2009, the Urbana-Champaign Big Broadband Project (UC2B) consortium⁷⁷ applied to the National Telecommunications and Information Agency for a federal Broadband Technology and Opportunity Program grant to build a local middle mile network in some underserved low-income neighborhoods.

The application was approved in 2010, and UC2B received over \$22 million in federal grants to build the network. UC2B partners also contributed over \$3.4 million in their own funding, and the project also received an additional matching \$3.5 million grant from the State of Illinois. Completed in 2013, the network connected more than 250 local community anchor

⁷³ "I3 Connectivity Explorer," *The Center of Internet as Infrastructure LCC*, accessed June 14, 2021, <https://i3cex.internet-is-infrastructure.org/sessions/new>

⁷⁴ Estimation made by this report's research team based on EPB's and Boston Comcast's prices for 1000 Mbps and 2000 Mbps (the highest download speed offered by Comcast), respectively.

⁷⁵ The Executive Office of the President, *Community-based Broadband Solutions* (Washington DC: The White House, 2015), 14. https://muninetworks.org/sites/www.muninetworks.org/files/White-House-community-based-broadband-report-by-executive-office-of-the-president_1.pdf

⁷⁶ Sean Gonsalves, "Study Finds Chattanooga Fiber Network 10-Year ROI: \$2.69 Billion," *Community Networks*, February 1, 2021, <https://muninetworks.org/content/study-finds-chattanooga-fiber-network-10-year-roi-269-billion>

⁷⁷ A local partnership between the cities of Champaign and Urbana in the state of Illinois, and the University of Illinois.

institutions and youth centers with more than 180 miles of fiber. The project served 1,000 households in low-income areas.⁷⁸

In 2012, UC2B issued a Request for Information (RFI) seeking a partner to expand its network. This document set three core principles for the broadband project, namely: (1) The network must be fiber, not alternative technologies, offering high speeds; (2) there must be open access and transparency to enable fair and open competition forever; and (3) the network must be built to all members of the community. Champaign-Urbana’s past community engagement informed the core principles of the RFI.⁷⁹

Participatory processes lead cities to embed the principles of non-discrimination and transparency into partnership agreements with private internet providers.

On May 29 that year, UC2B selected a local, Illinois-based television, telephone, and internet access provider named iTV-3 as the partner to expand the network. Given that the agreement between UC2B and iTV-3 honored the community’s core principles, non-discrimination, openness, and transparency helped enhance the competitiveness of the local broadband market. No surprise, hence, that according to the I3 Connectivity Explorer platform, a higher percentage of speed tests conducted in Urbana-Champaign (70%) for over one year (April 2020 to January 2021) proved actual speeds to meet target speeds of 25 Mbps—compared to Boston’s 62%. Further, as in Chattanooga, the price per 1 Mbps/month in Urbana-Champaign is also lower (\$0.04) than Boston’s \$2.19.⁸⁰

⁷⁸ Patrick Lucey and Christopher Mitchell, *Successful Strategies for Broadband Public-Private Partnerships* (Minneapolis: Institute for Local Self-Reliance, 2016), 20. <https://ilsr.org/wp-content/uploads/downloads/2016/08/PPP-Report-2016-1.pdf>

⁷⁹ Lucey and Mitchell, 21.

⁸⁰ Estimation made by this report’s research team based on Urbana-Champaign I3’s and Boston Comcast’s prices for 1000 Mbps and 2000 Mbps (the highest download speed offered by Comcast), respectively.

(3) *Setting a strategy for monitoring and accountability.* In January 2020, New York City released its Internet Master Plan.⁸¹ This is the first effort of any large urban city in the US to strategize the provision of equitable internet access to all city inhabitants. The plan offers a model for metro cities to introduce competition into residential and commercial broadband markets, alleviate discrepancies in the quality and pricing of service, and expand public broadband to create high-speed citywide access.⁸²

By setting their broadband plans, cities can promote monitoring and accountability to advance concrete actions toward digital inclusion.

Notably, the plan sets out concrete actions, assigns specific responsibilities to stakeholders, and projects certain outcomes upon a well-defined timeline. This facilitates the implementation of mechanisms to monitor whether the programmed actions have been implemented by the responsible parties, thereby promoting accountability.

Moreover, the plan gives due attention to disadvantaged individuals, communities, and populations by delineating specific measures for achieving universal digital inclusion.

(4) *Businesses committing to respect human rights.* A public commitment to implement the UN Guiding Principles on Business and Human Rights⁸³ is crucial because this pledge comes as the first step for ISPs to embed due diligence throughout their processes. In other words, by institutionalizing policies to identify, prevent, mitigate and account for how they address their impacts on human rights, private broadband providers can significantly improve their

⁸¹ Mayor’s Office of the Chief Technology Officer, *The New York City Internet Master Plan* (New York: Mayor’s Office of the Chief Technology Officer, 2020). https://www1.nyc.gov/assets/cto/downloads/internet-master-plan/NYC_IMP_1.7.20_FINAL-2.pdf

⁸² Jericho Casper, “NYC Internet Master Plan Offers Strategy for Metro Cities Confronting Broadband Monopolies,” *Community Networks*, April 22, 2021, <https://muninetworks.org/content/nyc-internet-master-plan-offers-strategy-metro-cities-confronting-broadband-monopolies>

⁸³ United Nations, *Guiding Principles on Business and Human Rights* (Geneva: United Nations, 2011). https://www.ohchr.org/documents/publications/guidingprinciplesbusinesshr_en.pdf

practices toward contributing more effectively to affordable, high-speed, and neutral broadband.

The implementation of the UN Guiding Principles on Business and Human Rights can support ISPs' efforts to improve broadband availability, accessibility, affordability, speed, and neutrality.

Over 700 US companies have pledged to align their strategies and operations with universal principles on human rights by joining initiatives such as the UN Global Compact. However, only 5 of them belong to the telecommunications sector while none is a broadband provider.⁸⁴ Notably, the two US fixed-line telephone enterprises that signed on to this initiative in 2019 (AT&T and Verizon Communications) ranked top in the American Customer Satisfaction Index of that same year.⁸⁵

Recommendations

(1) Enact net neutrality legislation at the local and state levels. Realizing digital equity as a human right in the City of Boston is an endeavor toward which every actor's single action counts. All stakeholders have a role to play, from the public sector, private broadband providers to nonprofit organizations and community members. But given the distinctive barriers affecting Boston's access to affordable, high-speed, and neutral broadband—outlined in this report—it falls, particularly, within the power of the Massachusetts State Legislature, the City of Boston, and the capacity of ISPs to advance positive change.

Given that Massachusetts has not enacted net neutrality legislation yet, the door is still open to harmful practices, such as bandwidth throttling, that might curtail the free flow of information on the internet. **Therefore, action taken by the State Legislature in this regard**

⁸⁴ US-based telecommunication companies participating in the UN Global Compact, retrieved from "See who's involved," *United Nations Global Compact*, accessed May 25, 2021, https://www.unglobalcompact.org/what-is-gc/participants/search?utf8=√&search%5Bkeywords%5D=&search%5Bcountries%5D%5B%5D=209&search%5Bsectors%5D%5B%5D=14&search%5Bper_page%5D=10&search%5Bsort_field%5D=&search%5Bsort_direction%5D=asc

⁸⁵ ACSI, *ACSI Telecommunications Report 2018-2019* (Ann Arbor: American Customer Satisfaction Index LLC, 2019), 4. <https://www.theacsi.org/images/stories/images/reports/19may-telecom-report.pdf>

would be very beneficial. Particularly, it is within the hands of the Massachusetts Senate and House to follow the recommendation issued in 2018 by the Special Committee on Net Neutrality. The enactment of a net neutrality bill is essential for avoiding throttling practices and violations of people’s rights to information and freedom of expression. The Boston Human Rights Commission and Boston City Council could play an important role in leading these efforts.

- (2) **Boston Digital Equity Plan, a collaborative approach.** Considering that digital disparities and social exclusion are intertwined and reinforce each other, **it is critical that the City of Boston apply a comprehensive human rights-based approach in providing and expanding this service. Specifically, by designing a *digital equity plan* based on a participatory process that includes affected individuals and communities, the City of Boston could advance non-discrimination, transparency, monitoring, and accountability—which have proven to be instrumental for improving broadband competition, speeds, prices, and inclusion across the country.** Involving multiple stakeholders in strategizing for better broadband provision in Boston has proven effective in the past. In 2006, the Wireless Task Force—integrated by several sectors—found a window of opportunity to reduce broadband prices (at \$35-\$42 per month on average) to \$15 for the same quality service.⁸⁶

⁸⁶ Wireless Task Force, *Wireless in Boston, Wireless Task Force Report* (Boston: City of Boston, 2006), 7. https://www.cityofboston.gov/images_documents/Boston%20Wireless%20Task%20Force%20Report%20-%20Final_tcm3-25558.pdf

6. Conclusions

When the City Council proclaimed Boston as a Human Rights City back in 2011, it envisioned a future where all citizens become partners of sustainable change and promoters of everyone's human rights. That future has not yet arrived. Ten years after the City Council's resolution, Boston is confronted with emerging challenges impeding some population groups to access affordable, high-speed, and neutral broadband at home. These barriers dilute the opportunities and resources through which people can live good lives, the lives we all have reason to value. Without universal access to affordable, high-speed, and neutral broadband, no Human Rights City can aspire to ensure lives of dignity to all its citizens. As Congressman John Lewis rightfully claimed, "Access to the internet... is the civil rights issue of the 21st century."

The present report responds to the concern of the Boston Human Rights Commission about the digital inequality that specific population groups in the city are experiencing. While the findings lay bare how lack of or deficient broadband access can trap individuals and communities into further disadvantages, they also shed light on two encouraging aspects.

First, applying a human rights lens throughout the broadband provision process offers valuable analytical angles for policy reform. Realizing digital equity as a human right is not a distant aspiration. The focus on the intersecting barriers around broadband availability, accessibility, affordability, speed, and neutrality is also a significant contribution.

Second, past and current efforts put in place by the public sector, nonprofit organizations, and ISPs demonstrate the virtues of coordinated action. But perhaps more importantly, they signal all stakeholders' willingness to grapple with the challenges our age presents to the city.

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Annex I: Broadband Glossary

BANDWIDTH

In the world of internet service, bandwidth has come to mean the speed of internet service, measured in bits per second.

BIT

A single unit of data, either a one or a zero. In the world of broadband, bits are used to refer to the amount of transmitted data. A kilobit (Kb) is approximately 1,000 bits. A megabit (Mb) is approximately 1,000,000 bits.

BROADBAND

A descriptive term for evolving digital technologies that provide consumers a signal switched facility offering integrated access to voice, high-speed data service, video-demand services, and interactive delivery services (e.g. DSL, Cable internet).

BROADBAND (TECHNOLOGY TYPES)

The different types of materials over which data travels.⁸⁷

- *Fiber*: A fiber optic cable is made up of bundles of hair-thin strands of very pure glass or plastic. Data passes over them in the form of light pulses created by lasers. Because of the purity of the glass or plastic, data can travel much farther and faster on fiber than on cable or DSL technologies.

⁸⁷ Rebecca Lee Armstrong and John Dilley, "The Consumers Guide to Internet Speed," *HighSpeedInternet*, March 23, 2021, <https://www.highspeedinternet.com/resources/the-consumers-guide-to-internet-speed>.

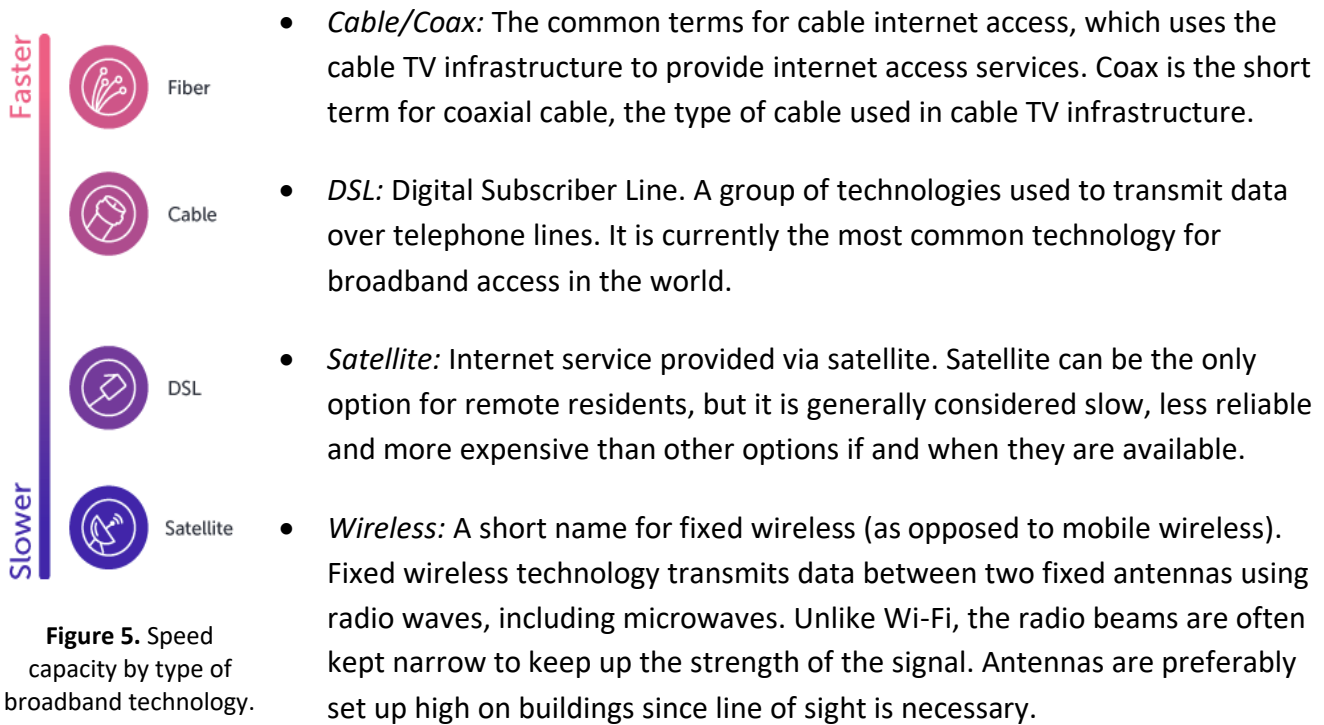


Figure 5. Speed capacity by type of broadband technology.

BROADBAND (SPEED RATES)

The speed of internet is measured based on the service’s *download* and *upload* capacities in Megabytes (1 million bits) per second (Mbps). Download speed enables data to move from the service provider to the end user, while upload speed moves data from the end user’s computer or device to the service provider.

- Standard speed rate.** Under the current FCC policy, created in 2015, *25 Mbps down/3 Mbps up* is the minimum standard for broadband. However, those speeds are no longer enough to meet the needs of households, particularly when all family members are working and attending school remotely.⁸⁸ A 100 Mbps down/100 Mbps up is seen as a more adequate standard.

⁸⁸ On March 2021, Senators asked the FCC to change the minimum speed rate benchmark. Please, see Karissa Bell, “Senators ask the FCC to change the definition of high-speed broadband,” *Engadget*, March 4, 2021, https://www.engadget.com/senators-fcc-change-definition-high-speed-broadband-222150947.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAA NAN9aXtPrLMoC9I6dG231dFslMdkvw_uX0nVpRzTK8_R9wDWMQ5N61ooXh4-

DIGITAL DIVIDE

The gap between those who have access to and can effectively use information technologies and those who cannot.⁸⁹ The concept has been further refined to include differences in access due to the availability of internet and the knowledge, skills, and abilities to deploy it. Therefore, the concept has been narrowed down to two tiers:

- *First-level digital divide:* It refers to the divergence of PC, laptop or tablet ownership (ownership of digital devices that enable online navigation) and broadband access.
- *Second-level digital divide:* It denotes the inequality of knowledge, skills, and abilities necessary to use information technologies.

DIGITAL EQUITY

The right of everyone to use information technologies, including access to digital devices, quality, free and neutral broadband and knowledge, without distinction, exclusion, restriction, or preference based on gender, race, ethnicity, national origin, age, sexual orientation, occupation, economic status or any other sociodemographic factor.

THROTTLING

Bandwidth throttling is the intentional slowing or speeding of an internet service by an internet service provider. Throttling can be used to actively limit a user's upload and download speed rates and even out the usage of the total bandwidth supplied across all users on the network.

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⁸⁹ Jayajit Chakraborty and M. Martin Bosman, "Measuring the Digital Divide in the United States: Race, Income, and Personal Computer Ownership," *Professional Geographer* 57, no. 3 (2008): 395, <https://doi.org/10.1111/j.0033-0124.2005.00486.x>